

**ABSTRACT**

The invention is in one embodiment an apparatus and a method for measuring the blood pressure of a vertebrate subject. The apparatus uses an inflatable chamber with a sensor to detect signals indicative of a blood pressure of the subject during an inflation interval of the inflatable chamber. If secondary motion or artifact signals are detected, the apparatus and method determine whether the secondary signals are below a predetermined value, and if so, complete the measurement. If the signals indicate that the measurement is not accurate, the system and method immediately institute a measurement of the blood pressure during a deflation interval, which can include a step deflation interval. In the event that the subject is identified as a neonate, the system and method immediately measure using the deflation interval procedure.